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LASLETT'S "TIMBER AND TIMBER TREES"

Timber and Timber Trees, Native and Foreign. By Thomas Laslett, Timber Inspector to the Admiralty. Crown 8vo, pp. 352. (London: Macmillan and Co. 1875.)

IN all parts of the world where the vegetation partakes of an arboreous character, the wood is applied by the natives either for building their huts or houses, for their canoes or war-vessels, or for various domestic purposes, according to the extent of civilisation under which they live. This universal application of timber dates back to the earliest ages, and though the world's consumption of wood has been increasing ever since, and more especially in modern times, the supplies have never yet absolutely failed. Though the trade in timber, properly so called, that is for building purposes as distinguished from ornamental woods, is one of immense proportions and great value, the more general application of iron at the present day for constructive purposes has to some extent, no doubt, prevented a dearth in the timber market. Notwithstanding this substitution of iron both in shipbuilding and in general mechanical work, no absolute diminution in the quantities of timber imported into this country has been effected. On the contrary, the official returns show a gradual increase both in rough and in planed or *dressed* timber, large quantities of which now come regularly from Sweden and Norway, from Russia, British North America, and other countries.

There are but few, if any, of our commercial articles, whether they be of home or foreign produce, that have a wider range of interest or more numerous ramifications than the wood and timber supplies. Primarily the subject may be divided into two divisions, the first dealing with timber as used for constructive purposes, and the second with woods as used by the cabinetmaker or for ornamental work; and still another important division is that of dye woods.

When we consider that the value of timber chiefly for building purposes imported into this country during the year 1874 amounted to over twenty millions sterling, it is surprising that so little is generally known or so few books have been written on a subject of such great commercial and general importance. Besides the produce of our own forests, composed for the most part of oak, larch, fir, ash, beech, &c., the bulk of the wood imported from Sweden, Norway, Russia, &c., is the produce of coniferous trees, the botanical origin of which are for the most part known; but over and above these are numerous woods which, though they are and have been articles of commerce for many years past, are still quite unknown as to their botanical sources. And it is not a little remarkable that most of these unknown woods are the produce of some part of the South American continent. From Brazil and Paraguay, for instance, we are constantly receiving samples of finely-marked hard and apparently durable woods, but no information ever reaches us of the nature of the trees furnishing these woods. If collectors would only bear in mind that samples of wood with native names only are next to valueless, and would use every endeavour to secure and bring home a flowering specimen of the tree producing any particular wood, they would be helping to develop the resources of the forests, besides contributing to the knowledge of the flora of the country. But this is a matter which does not concern the importer so long as the necessary supplies are forthcoming and remunerative prices can be realised; and it is by the agents or exporters alone at the port of shipment that this information can be obtained, consequently our knowledge of the sources of the ornamental hard woods of commerce remains pretty much as it did ten or even twenty years ago. It is true that at the several International Exhibitions, notably those of 1851 and 1862, some remarkably fine collections of woods were exhibited, but only in comparatively few cases were really trustworthy catalogues prepared. Even the British Guiana collections, which were remarkable for the size of the specimens and the care exercised in their selection, were wofully deficient in scientific nomenclature, and remain so to the present time, simply on account of the absence of flowering specimens, which should have been collected at the time of cutting the timber.

It is no doubt in consequence of these obstacles and the scant material at command that no one has hitherto been tempted to take up our timber and wood supplies as a special subject. Many are the collections that have been formed of British and foreign woods, but they have never found a champion in the same way that drugs did in the late Daniel Hanbury, who grudged neither time, trouble, nor expense in seeking authentic information in his favourite pursuit. The most complete lists of woods perhaps ever published are those contained in the Jury Reports of the Great Exhibition of 1851, where, besides notes on the qualities of the woods and their uses, their weights per cubic foot and their specific gravities are in some cases given. In 1852 a useful "Descriptive Catalogue of the Woods commonly employed in this country for the Mechanical and Ornamental Arts" was published by Charles Holtzapffel, but this book is of course now out of date, and nothing of any importance has since appeared beyond a few occasional lists and papers scattered about in different journals.

It was therefore with some satisfaction that we took up the book whose title stands at the head of this notice, with the hope that we should find it a trustworthy handbook of woods in general. It required, however, but a slight glance to show us that it was devoted almost exclusively to the consideration of timber for building or carpentry work, to the exclusion of ornamental woods. This we regret the more as the timber and hard wood trades, though distinct in themselves, are nevertheless closely allied subjects, and treated together with proper care and attention, would form a most valuable work.

Taking the book as it is, we find that a large portion of the early part is devoted to the question of the formation and structure of wood, matters which we think unnecessary in a work of this description, occupying space which might be much more advantageously used. A chapter is also given on the computation of the ages of trees and their rate of growth. After referring to the computed ages of well-known large trees, by which it has been estimated amongst others that the oak attains to an age of

810 to 1,500 years, the yew from 1,214 to 2,820, and the Baobab (*Adansonia digitata*) to 5,000 years, the author points out that these figures have been based upon the general assumption of each concentric ring of wood being the growth of one year. Speaking of his own experience, he says:—"I have carefully examined and counted the annual layers of a great many specimens—taking generally the average of the trees—with the view to show the common and comparative rates of growth, and have tabulated them to afford an opportunity of noticing any variations there may have been in the time required to form the wood in each of the several given diameters of 6, 12, 18 inches," &c. In these tables it is shown that in fifteen specimens of oak, the diameter of whose stems were in all cases 6 inches, the number of rings ranged from 12 to 49; in the same number of sections measuring 12 inches diameter they ranged from 19 to 105, and in those of 18 inches diameter from 24 to 160. In sections of Greenheart (*Nectandra Rodiæi*) of 6, 12, and 18 inches diameter, the concentric rings were respectively 37, 60, and 83, while in Mexican mahogany of the same dimensions the result showed the number of rings at 17, 30, and 44. In most cases from six to ten sections were examined, and the average so obtained.

In the matter of ordinary timber the information given is varied and tolerably complete, and the opinions of the author as regards strength, durability, and value for practical purposes may, of course, be taken as the opinion of one having experience and authority to speak on such matters. Moreover, the tables showing the breaking weights of the different woods and their specific gravities are the results of actual experiments. It is much to be regretted that in a work of this kind, which has not been produced without some care, more attention has not been given to scientific accuracy, not only in tracing out the sources of the woods mentioned, but also in bringing what botanical nomenclature has been attempted down to modern times. Thus, for instance, the "Maçaran duba" of Brazil (p. 182) might have been accredited as being a species of *Mimusops*, the "Cedro," on the following page, not as a species of "Cedar" but of *Cedrela* (*Cedrela odorata* probably), and the "Vinhatico," (p. 186) probably *Persea indica*. Again, with regard to African oak or teak, it is stated to be "probably the *Swietenia senegalensis* or *S. Khaya*," but it is well known that the durable timber commonly known under the above names is produced by *Oldfieldia africana*, a Euphorbiaceous tree. The Cuban Sabicu wood, likewise, of which the stairs of the great Exhibition building in Hyde Park in 1851 were constructed, and which, we believe, are still in use at Sydenham—such is the durability of the wood—is described as being produced by *Acacia formosa*, but it is under *Lysiloma sabicu* that any description of this wood is to be found in works of a botanical character.

It is not with the view of depreciating the value of the book that we point out these errors. In a new edition, with the aid of a botanist and a determination to extend the scope of the work so as to include all woods known in commerce, the value of the book might be considerably enhanced. As it is, however, besides the technical details there are numerous interesting facts distributed through its pages, many of which are new to us.

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*RECENT FRENCH EXPERIMENTAL PHYSIOLOGY**

Physiologie Expérimentale. Travaux du Laboratoire de M. Marey. (Paris: G. Masson, 1876.)

THE second of the memoirs in the work before us, by M. Marey, contains the description of a new *schema*, or dynamical model of the circulatory system, which from the ingenuity of its construction calls for special notice.

M. Marey, not satisfied with the original attempt of Weber to reproduce the phenomena of the circulation in a system of elastic tubes, nor with his own earlier efforts in the same direction, was led to the construction of the one to be noticed immediately. He tells us that all previous models were correct enough in imitating certain special points in the vascular circulation, but these were at the expense of, and to the total neglect of, others. The perfect reproduction of each phase is the end he has had in view in the construction of the new apparatus.

It can be proved without doubt that the heart takes a longer time to relax than to contract; the systolic curve, when represented graphically, is therefore more abrupt than the diastolic. To represent this on paper mechanically, the easiest method is by the employment of a cam or eccentric, which, as it turns, lifts a lever resting upon it and following the variation in its eccentricity.

In Fig. 1 the winch handle turns an axle on which two cams are fixed, the whole being connected with the two steady-arms and the immovable upright board on the left-hand side. A flywheel tends to render the rotation of the axle uniform. The irregularly-shaped eccentrics (C.V. and C.O.), the form of which will be explained further on, each move one of the smaller boards to the right of the figure, because these are pressed towards the left by the elastic spring F, and the dilatation of the cavities of the artificial heart (V and O), whilst they are being refilled. They transmit their movements through the intervention of the fixed pulleys attached to the boards, which latter again act on the artificial heart by the strain they exercise upon the cords S.O. and S.V. The action of the auricle being intermittent, the machine is so arranged that the cord S.O. is lax (as in the figure) during the time that it is at perfect rest. The ventricle never being in a state of true repose, but always in a state of contraction or expansion, it does not require the extra apparatus.

The artificial heart is constructed with caoutchouc cavities, supplied with valves to represent those in the human circulation. The *auricle* is covered with netting, to which four parallel cords, running through holes in the big board, are attached. The cords are fixed on a square piece of wood, which is kept in position by a spiral spring, and in connection with the moving board by the thread S.O. The *ventricle* has over it a case (white in the figure) to the edges of which cords are fixed, which are attached at their other ends to a board, which is put into communication with the moving board by means of the hooks and elastic rings (F), and the cord S.V. It is evident that any strain on the cords S.V. or S.O. will compress the auricle (O) and the ventricle (V) against the main board to which they are attached, and so produce a systole of

* Continued from p. 146.